

## Chris E. Kuyatt

Chris E. Kuyatt, an enthusiastic and inspiring scientist and manager at NBS/NIST, died following a brief illness on September 12, 1998 at age 67. He will be sorely missed by his many colleagues at NIST and throughout the world.

Kuyatt was born on November 30, 1930 in Grand Island, Nebraska, and received his BS, MS, and Ph.D. degrees from the University of Nebraska. In 1960, he joined the National Bureau of Standards (now the National Institute of Standards and Technology) as a physicist in the Electron Physics Section and worked with J. Arol Simpson, who was developing an electron monochromator-analyzer. Shortly thereafter at Westinghouse, George Schulz reported the first observation of a resonant decrease in the elastic scattering of 19.3 eV electrons in helium. Kuyatt became intrigued by this new discovery and he and Simpson modified the electron monochromator-analyzer by adding a gas scattering cell; sharp resonances were soon found in the transmitted current. At the same time, similar resonances were seen in photoabsorption spectra taken at the NBS synchrotron by Keith Codling and Robert Madden. These resonances were explained by Ugo Fano, also at NBS then, as due to the creation of multi-electron auto-ionizing states. Such resonances were soon observed in many gases, and became a fertile area of research. Indeed, the level of intellectual excitement at NBS throughout this period was exhilarating.

Kuyatt and Simpson continued their collaboration to develop improved electron monochromators and analyzers, and later, Kuyatt also focused on the optical properties of electron lenses. Their

1967 paper in the Review of Scientific Instruments on the principles of monochromator design was a landmark in the development of these systems. Kuyatt's design philosophy for monochromators and analyzers was further described in a set of unpublished lecture notes which were circulated widely and used by many scientists as the basis for their own designs.

As the discipline of surface science began to emerge, Kuyatt began to study and develop specialized electron optical systems for such applications as measuring energy distributions of field-emitted and photo-emitted electrons, and delivering polarized electrons produced in the GaAs source. These electron-optical systems, with their combination of high energy resolution and transmission, made possible a host of key observations of new phenomena on clean, adsorbate-covered, and magnetic surfaces.

After he turned his attention to scientific management, Chris rose through a series of NIST positions of increasing responsibility, serving as Chief of the Electron and Optical Physics Section, Chief of the Radiation Physics Division, and Director of the Center for Radiation Research. As Center Director, Kuyatt led NBS/NIST in the areas of atomic, nuclear and accelerator physics, optical radiometry, ionizing radiation, and dosimetry. Most recently, his interests were directed toward science policy and international cooperation, working with the NIST Visiting Committee on Advanced Technology and participating in negotiations to develop internationally accepted guidelines for evaluating and expressing uncertainties in physical measurements.

Kuyatt was a wonderful person to have as a colleague. He was excited by scientific questions that arose in papers or discussions, and he probed relentlessly to identify the key phenomena or issues. His infectious enthusiasm for science was equaled by his love of music. In his early years, Chris, who stood well over six feet tall, must have been an impressive figure leading the University of Nebraska Marching Band in his 1 1/2 foot tall drum major's hat.

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